IN THE CLAIMS

Please amend the claims as follows:

1. (Original) A system comprising:

a lithium battery having an internal resistance;

a charge storage capacitor electrically connected to lithium battery;

a first device electrically connected to said lithium battery and adapted to be powered by said battery; and

at least one second device electrically connected to said charge storage capacitor,

wherein the at least one second device is adapted to:

access a predetermined set of charge time measurement set-up parameters and a predetermined elective replacement time (ERT) charge time limit determined from a battery resistance ERT target that corresponds to a battery charge depletion target;

determine a rate of charge storage in the capacitor using the predetermined set of charge time measurement set-up parameters;

compare the determined rate of charge storage in the capacitor to the predetermined ERT charge time limit for the predetermined set of charge time measurement set-up parameters; and

declare an ERT based on a number of comparisons between the determined rate of charge storage in the capacitor and the ERT charge time limit.

2. (Original) The system of claim 1, wherein the rate of charge storage is correlated to a value of internal battery resistance through a charge depletion vs. battery resistance mathematical model.

3. (Original) The system of claim 1, wherein the first device has a plurality of relatively quiescent periods and the storage capacitor is adapted to provide a basis of determining the rate of charge storage during one of the relatively quiescent periods.

4. (Original) The system of claim 1, wherein the predetermined set of charge time measurement set-up parameters include:

a physician-programmed final voltage (VF) to end a time measurement for determining the rate of charge storage in the capacitor; and

an initial reference voltage (VI) to begin the time measurement for determining the rate of charge storage in the capacitor,

wherein a pacing supply storage voltage (Vcs) increases approximately linearly from VI to VF during the time measurement for determining the rate of charge storage in the capacitor.

5. (Original) The system of claim 4, wherein:

the at least one second device includes a multiplexer for selecting one of VF and VI to be compared to a capacitor voltage level (Vsc) for controlling current flow from the battery power terminal to the capacitor; and

the at least one second device selects VI to be compared to Vsc to begin a time charge measurement count and VF to be compared to Vsc to end the time charge measurement count.

6. (Original) The system of claim 1, wherein the at least one second device is adapted to declare an ERT if N previous measurements are greater than the ERT charge time limit.

7. (Currently Amended) The system of claim 1, wherein a device operating current ~~rage~~ range is subdivided into current range bins, each bin having a battery charge depletion target and a battery resistance ERT target, each bin further having a predetermined set of charge time measurement set-up parameters and a predetermined ERT charge time limit determined from the battery charge depletion target and the battery resistance ERT target.

8. (Original) The system of claim 1, wherein the rate of charge storage is correlated to a value of internal battery resistance through a charge depletion vs. battery resistance mathematical model.

9. (Original) The system of claim 1, wherein the at least one second device includes a time charge counter for measuring a time in which a relatively constant current charges the capacitor from an initial reference voltage (VI) to a physician-programmed final voltage (VF).

10-25. (Canceled)

26. (New) The system of claim 1 wherein the at least one second device includes comparison circuitry, wherein the comparison circuitry includes:

a first comparator electrically connected to the lithium battery and adapted for comparing a battery terminal voltage (Vbatt) to a brownout voltage (Vstop), the first comparator having a first comparator output;

a second comparator electrically connected to the charge storage capacitor and adapted for comparing a storage voltage (Vcs) to at least one reference voltage (Vx), the second comparator having a second comparator output, wherein the first comparator output and the second comparator output are adapted to control current flow from the battery power terminal to the charge storage capacitor.

27. (New) The system of claim 26, wherein the at least one second device includes a switched capacitor power supply connected to at least the lithium battery and the charge storage capacitor via a switch for charging the charge storage capacitor.

28. (New) The system of claim 27, wherein an output of the comparison circuit is connected to the switched capacitor power supply to control current flow from the battery to the charge storage capacitor.

29. (New) A system comprising:

a lithium battery having an internal resistance;

a charge storage capacitor electrically connected to at least the lithium battery;

a first device electrically connected to said lithium battery and adapted to be powered by the battery and to select a discharge voltage (Vd);

at least one second device electrically connected to said charge storage capacitor, wherein the at least one second device includes:

a comparison circuit, wherein the comparison circuitry includes:

a first comparator electrically connected to the lithium battery and adapted for comparing a battery terminal voltage (Vbatt) to a brownout voltage (Vstop), the first comparator having a first comparator output; and

a second comparator electrically connected to the charge storage capacitor and adapted for comparing a storage voltage (Vcs) to at least one reference voltage (Vx), the second comparator having a second comparator output, wherein the first comparator output and the second comparator output are adapted to control current flow from the battery power terminal to the charge storage capacitor, and

a charge time measurement (CTM) control circuit connected to the comparison circuit, wherein the charge time measurement (CTM) control circuitry is adapted to:

access a predetermined set of charge time measurement set-up parameters and a predetermined elective replacement time (ERT) charge time limit determined from a battery resistance ERT target that corresponds to a battery charge depletion target,

determine a rate of charge storage in the capacitor using the predetermined set of charge time measurement set-up parameters,

compare the determined rate of charge storage in the capacitor to the predetermined ERT charge time limit for the predetermined set of charge time measurement set-up parameters, and

declare an ERT based on a number of comparisons between the determined rate of charge storage in the capacitor and the ERT charge time limit.

30. (New) The system of claim 29, wherein the at least one second device includes a switched capacitor power supply connected to at least the lithium battery and the charge storage capacitor via the discharge switch for charging the charge storage capacitor.

31. (New) The system of claim 29, wherein the predetermined set of charge time measurement set-up parameters include:

a programmed final voltage (VF) to end a time measurement for determining the rate of charge storage in the charge storage capacitor; and

an initial reference voltage (VI) to begin the time measurement for determining the rate of charge storage in the charge storage capacitor.

32. (New) The system of claim 31, wherein a storage voltage (Vcs) increases approximately linearly from VI to VF during the time measurement for determining the rate of charge storage in the charge storage capacitor.

33. (New) The system of claim 31, wherein:

the CTM control circuitry includes a multiplexer for selecting one of VF and VI to be compared to a charge storage capacitor voltage level (Vsc) within the pacemaker control circuitry for controlling current flow from the battery power terminal to the charge storage capacitor; and

the CTM control circuitry is adapted to select VI to be compared to Vsc to begin a time charge measurement count and VF to be compared to Vsc to end the time charge measurement count.

34. (New) The system of claim 31, wherein the CTM control circuitry includes a time charge counter for measuring a time in which a relatively constant current charges the charge storage capacitor from VI to VF

35. (New) The pacemaker of claim 31, wherein the CTM control circuitry includes a multiplexer for selecting one of the VF, VI and Vd to be compared to a charge storage capacitor voltage level (Vsc).

36. (New) The pacemaker of claim 35, wherein the CTM control circuitry selects:

VF to be compared to Vsc to synchronize the beginning of the time measurement;

Vd to be compared to Vsc to limit the discharge of the charge storage capacitor and open the discharge switch;

VI to be compared to Vsc to begin a time charge measurement count after a bypass capacitor (Cb) is discharged and a battery terminal voltage (Vbatt) is driven to a brownout voltage (Vstop) limit; and

VF to be compared to Vsc to end the time charge measurement count.